

Proposed MPS/Aura Level 4 Requirements

MPS/Aura Requirement	Release	MPS/Aura Requirement Description	Comments
CMD-01	1	The MPS/Aura simulator shall be capable of receiving command data as UDP command blocks.	
CMD-02	1	The MPS/Aura simulator shall be capable of configuring command receipt processing in IP mode.	
CMD-02.01	1	The MPS/Aura simulator shall be capable of configuring IP mode command receipt to UDP MULTICAST mode.	
CMD-02.02	1	The MPS/Aura simulator shall be capable of configuring IP mode command receipt to any valid UDP MULTICAST IP address.	
CMD-02.03	1	The MPS/Aura simulator shall be capable of configuring IP mode command receipt to any valid UDP MULTICAST Port number.	
CMD-02.04	1	The MPS/Aura simulator shall be capable of configuring IP mode command receipt to any block length between one and 6000 bytes.	
CMD-03	1	The MPS/Aura simulator shall accept operator directives that enable or disable the following elements of the command validation process: Codeblock BCH Parity Validation, Transfer Frame Header Validation, FARM Protocol Validation, and User Command Packet Header Validation.	
CMD-03.01	1	When the Codeblock BCH parity validation element is enabled, the command subsystem will verify for each codeblock of each received CLTU that the BCH parity byte matches a computed value and that the spare bit is equal to zero. If any codeblock of a CLTU fails validation, an event message will be generated and that entire CLTU will be discarded. When this element is disabled, the parity byte will be assumed to be valid.	
CMD-03.02	1	When the Transfer Frame Header validation element is enabled, the command subsystem will verify that all of the fields of the Transfer Frame header, except the sequence number, match expected values and ranges as defined in the ICD. If the Transfer Frame Header validation fails, an event message will be generated and the entire Transfer Frame will be discarded. If applicable, the CLCW corresponding to that Transfer Frame's virtual channel will be updated with error information. When this element is disabled, the Transfer Frame header values will be assumed to be valid.	
CMD-03.03	1	When the FARM validation element is enabled, the command subsystem will verify that the Transfer Frame sequence number is valid as expected for FARM-1 protocol as defined in the ICD. If the FARM validation fails, an event message will be generated and the entire Transfer Frame will be discarded. If applicable, the CLCW corresponding to that Transfer Frame's virtual channel will be updated with error information. When this element is disabled, the Transfer Frame sequence number will be assumed to be valid.	
CMD-03.04	1	When the Command Packet Header validation element is enabled, the command subsystem will verify that the Command Packet Header fields contain valid values as defined in the ICD. If the Command Packet Header validation fails, an event message will be generated and the Command Packet will be discarded. This requirement is applicable to the spacecraft command packet format and the instrument command packet format. When this element is disabled, the Command Packet Header is assumed to be valid.	
CMD-04	1	The MPS/Aura simulator shall accept operator directives to change all fields of the spacecraft and instrument CLCWs.	
CMD-05	1	The MPS/Aura simulator shall simulate spacecraft command acceptance according to the COP-1 protocol.	

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CMD-05.01	1	The MPS/Aura simulator shall perform Type AD spacecraft command acceptance checks in accordance with the FARM-1 protocol if FARM-1 protocol checking is enabled.	
CMD-05.01.1	1	The MPS/Aura simulator shall reject Type AD spacecraft commands and post a command rejected event message if the Lockout bit is set in the spacecraft CLCW.	
CMD-05.01.2	1	The MPS/Aura simulator shall reject Type AD spacecraft commands, post a command rejected message, and set the Lockout bit in the spacecraft CLCW if (1) the Frame Sequence Count in the Transfer Frame header is more than 90 counts greater than or more than 90 counts less than (modulo 256) the Report Value field of the spacecraft CLCW <u>and</u> (2) FARM-1 protocol checking is enabled.	
CMD-05.01.3	1	The MPS/Aura simulator shall reject Type AD spacecraft commands, post a command rejected message, and set the Retransmit bit in the spacecraft CLCW if (1) the Frame Sequence Count in the Transfer Frame header is between one and 90 counts greater than (modulo 256) the contents of the Report Value field of the spacecraft CLCW <u>and</u> (2) FARM-1 protocol checking is enabled.	
CMD-05.01.4	1	The MPS/Aura simulator shall reject Type AD spacecraft commands and post a command rejected message if (1) the Frame Sequence Count in the Transfer Frame header is between one and 90 counts less than (modulo 256) the contents of the Report Value field of the spacecraft CLCW <u>and</u> (2) FARM-1 protocol checking is enabled.	
CMD-05.01.5	1	The MPS/Aura simulator shall clear the spacecraft CLCW Lockout bit upon receipt of an UNLOCK Control Command (Type BC) containing the spacecraft VCID.	
CMD-05.01.6	1	The MPS/Aura simulator shall set the spacecraft CLCW Report Value field to the data value contained within the third byte of a SET V(R) Control Command (Type BC) containing the spacecraft VCID.	
CMD-05.01.7	1	The MPS/Aura simulator shall increment the Report Value field (modulo 256) of the spacecraft CLCW upon receipt of a Type AD spacecraft command whose Frame Sequence Count matches the current spacecraft CLCW Report Value field contents, provided that FARM-1 protocol checking is enabled.	
CMD-05.02	1	The MPS/Aura simulator shall perform Type AD instrument command acceptance checks in accordance with the FARM-1 protocol if FARM-1 protocol checking is enabled.	
CMD-05.02.1	1	The MPS/Aura simulator shall reject Type AD instrument commands and post a command rejected event message if the Lockout bit is set in the instrument CLCW.	
CMD-05.02.2	1	The MPS/Aura simulator shall reject Type AD instrument commands, post a command rejected message, and set the Lockout bit in the instrument CLCW if (1) the Frame Sequence Count in the Transfer Frame header is more than 90 counts greater than or more than 90 counts less than (modulo 256) the Report Value field of the instrument CLCW <u>and</u> (2) FARM-1 protocol checking is enabled.	
CMD-05.02.3	1	The MPS/Aura simulator shall reject Type AD instrument commands, post a command rejected message, and set the Retransmit bit in the instrument CLCW, if (1) the Frame Sequence Count in the Transfer Frame header is between one and 90 counts greater than (modulo 256) the Report Value field of the instrument CLCW <u>and</u> (2) FARM-1 protocol checking is enabled.	
CMD-05.02.4	1	The MPS/Aura simulator shall reject Type AD instrument commands and post a command rejected message if (1) the Frame Sequence Count in the Transfer Frame header is between one and 90 counts less than (modulo 256) the Report Value field of the instrument CLCW <u>and</u> (2) FARM-1 protocol checking is enabled.	

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CMD-05.02.5	1	The MPS/Aura simulator shall clear the instrument CLCW Lockout bit upon receipt of an UNLOCK Control Command (Type BC) containing the instrument VCID.	
CMD-05.02.6	1	The MPS/Aura simulator shall set the instrument CLCW Report Value field to the data value contained within the third byte of a SET V(R) Control Command (Type BC) containing the instrument VCID.	
CMD-05.02.7	1	The MPS/Aura simulator shall increment the Report Value field (modulo 256) of the instrument CLCW upon receipt of a Type AD instrument command whose Frame Sequence Count matches the current instrument CLCW Report Value field contents, providing that FARM-1 protocol checking is enabled.	
CMD-06	1	The MPS/Aura simulator shall provide the capability to monitor and display command processing status.	
CMD-07	1	Upon operator request, the MPS/Aura simulator shall store received commands for posttest review subject to specified storage capacities.	
CMD-08	1	The MPS/Aura simulator shall use information from the PDB to perform command identification processing. The Command subsystem shall match command bit patterns received to stored bit patterns to locate command mnemonics in the PDB.	
CMD-09	1	The MPS/Aura simulator shall provide the capability to respond to that subset of spacecraft commands that are defined in the Aura PDB Command Execution Verification (CEV) file. If the PDB CEV file contains end-item verifier telemetry mnemonics associated with the identified command, the associated telemetry point(s) will be set to the corresponding value(s) defined in the CEV file.	
CMD-10	1	The MPS/Aura simulator shall generate a simulator event message whenever a command is received.	
CMD-10.01	1	The MPS/Aura simulator shall generate a simulator event message to display the command mnemonic whenever a valid command is decoded.	
CMD-10.02	1	The MPS/Aura simulator shall generate a simulator event message to display the values of command submnemonics whenever a command containing submnemonics is decoded.	
CMD-11	1	The MPS/Aura simulator shall generate a simulator event message whenever a command error is detected	
CMD-11.01	1	The MPS/Aura simulator shall generate a simulator event message indicating the command error detected whenever a command in error is decoded, provided that command validation is enabled.	
CMD-11.02	1	The MPS/Aura simulator shall generate an event message indicating that an unknown command has been received whenever a command cannot be matched to any PDB entry.	
CMD-12	1	The MPS/Aura simulator shall perform verification of selected fields of the Command Data Block (CDB) header of received commands. The fields to be verified shall be Message Type, Source, Destination, spacecraft identifier (SCID), and Sequence Count.	
CMD-12.01	1	The MPS/Aura simulator shall generate event messages reporting inconsistencies in the verifiable fields of the CDB.	
CMD-12.02	1	The MPS/Aura simulator shall accept and execute operator directives that set expected values for verification of the CDB header.	REWORDED slightly.
CMD-12.03	1	The MPS/Aura simulator shall permit the operator to enable and disable CDB verification.	
CMD-13	1	The MPS/Aura simulator shall receive spacecraft memory and table loads via command blocks and shall store the load data in a load buffer (simulated spacecraft memory.)	
CMD-13.01	1	The MPS/Aura simulator shall perform a validation of the command load data checksum, for those loads that contain a checksum.	

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CMD-13.02	1	The MPS/Aura simulator shall permit the operator to inhibit the checksum validation.	
CMD-14	1	The MPS/Aura simulator shall be capable of simulating a spacecraft memory dump of loaded data.	
CMD-14.01	1	The MPS/Aura simulator shall be capable of copying a single memory load from the load buffer to the dump buffer.	
CMD-14.02	1	The MPS/Aura simulator shall permit the operator to inhibit copying the memory load to the dump buffer.	
CMD-15	1	The MPS/Aura simulator shall process commands that request or configure for a spacecraft memory dump.	
CMD-16	1	The MPS/Aura simulator interface with EOC shall comply with the command interface formats and protocols specified in the EDOS to EGS Elements interface document	
CMD-17	1	The MPS/Aura simulator shall be capable of updating multiple command counters in telemetry. The command counters to be updated shall be as agreed upon with Aura project representatives.	
CMD-18	1	The MPS/Aura simulator shall interpret VCID 0 (spacecraft), VCID 1 (instrument), and VCID 16 and 17 (TIE critical) commands.	
CMD-19	1	The MPS/Aura simulator shall be capable of interpreting multipart commands.	REWORDED.
CMD-20	1	The MPS/Aura simulator shall be capable of logging up to 8 MB of received commands during a testing session.	
CMD-21	1	The MPS/Aura simulator shall be capable of receiving spacecraft commands in a CLTU bitstream through the serial interface at rates from 125 bps to 2 Kbps.	REWORDED.
CMD	TBN	The MPS/Aura simulator shall be capable of a <TBN> simulation of spacecraft Stored Command Processing	NEW.
CMD	TBN	The MPS/Aura simulator shall be capable of receiving instrument memory and table loads via command blocks and shall store the load data in a load buffer (simulated memory.)	NEW. Exact capability is TBN.
GEN-01	1	The MPS/Aura simulator shall be Year 2000 compliant	
GEN-02	1	The MPS/Aura simulator shall be capable of maintaining an internally generated time code to a resolution of 125 milliseconds..	REWORDED. RENUMBERED from TLM-33.
GEN-02.01	1	The MPS/Aura simulator shall be capable of setting GMT and simulated spacecraft time as directed by the operator.	REWORDED. GUI-06 is being removed because it is a duplicate of this req.
GEN-03	1	The MPS/Aura simulator shall be capable of executing a scenario script file.	
GEN-03.01	1	The MPS/Aura simulator shall be capable of executing operator directives via a scenario script to update telemetry parameters by mnemonic.	
GEN-03.02	1	The MPS/Aura simulator shall be capable of executing operator directives via a scenario script to retrieve and display the value of any telemetry parameter by mnemonic.	
GEN-03.03	1	The MPS/Aura simulator shall be capable of executing operator directives via a scenario script to start and stop telemetry transmission.	
GEN-03.04	1	The MPS/Aura simulator shall be capable of executing operator directives via a scenario script to start and stop transmission of CLCW packets.	
GEN-03.05	1	The MPS/Aura simulator shall be capable of executing operator directives via a scenario script to enable and disable all elements of command validation that are under operator control. See "CMD" requirements for those command validation elements that are controllable by the operator.	

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GEN-03.06		The MPS/Aura simulator shall provide a scenario file container name verification capability, the purpose of which is to verify that all telemetry and command mnemonics appearing in scenario scripts exist in the PDB.	NEW.
GEN-04	1	The MPS/Aura simulator shall be capable of providing files of received or generated test data on electronic and physical media.	
GEN-05	1	The MPS/Aura simulator shall acknowledge an operator request within 2 seconds of its entry.	REWORDED slightly.
GEN-06	1	The MPS/Aura simulator shall start execution of an operator request within 5 seconds of its entry.	REWORDED slightly.
GEN-07	1	The MPS/Aura simulator shall be capable of maintaining an internal time code to a resolution of 125 milliseconds.	TO BE REMOVED. Duplicate of GEN-02.01
GEN-08	1	The MPS/Aura simulator shall comply with the set of display guidelines specified in DSTL-92-007, Human-Computer Interface Guidelines, August, 1992.	
GEN-09	1	The MPS/Aura simulator shall comply with security provisions specified in the NASA Automated Information Security Handbook, NHB 2410.9A.	
GEN-10	1	The MPS/Aura simulator shall comply with the NASA Communications (Nascom) Access Protection Policy and Guidelines.	
GEN-11	1	The MPS/Aura simulator shall provide a hard disk drive with sufficient capacity to store the program bootstrap, executable files, and other simulation environment files, such as the Project Data Base and scenario files used during tests, and a TBD percent reserve.	
GEN-12	1	The MPS/Aura simulator shall provide a physical media storage device that can be used to support the exchange of small amounts of information with external systems and for system backups and data logging.	
GEN-13	1	The MPS/Aura simulator shall be portable.	
GEN-14	1	The MPS/Aura simulator shall provide an Ethernet interface that conforms to 10BaseT of the IEEE 802.3 standard.	
GEN-15	1	The MPS/Aura simulator shall interface with the EOC through the Ethernet interface using the Internet Protocol (IP) suite, including TCP/IP and UDP/IP.	
GEN-16	1	The MPS/Aura simulator shall receive CLTUs in command data blocks from the EOC and output EDUs (packets and CLCWs) to the EOC through the Ethernet interface. All data transfers through this Ethernet interface shall be based on UDP/IP protocol.	REWORDED slightly.
GEN-17	1	The MPS/Aura simulator shall provide a capability to permit modification of the Command End-Item Verifiers file.	REWORDED.
GEN-17.01	1	The MPS/Aura simulator Command End-Item Verifiers modification utility shall permit the addition of a single record to the file of end-item verifiers at each invocation.	REWORDED.
GEN-17.02	1	The MPS/Aura simulator Command End-Item Verifiers modification utility shall permit the modification of a single record of the file of end-item verifiers at each invocation. The Low Limit and State Text fields shall be the only fields that may be modified.	REWORDED.
GEN-17.03	1	The MPS/Aura simulator Command End-Item Verifiers modification utility shall permit the deletion of a single record from the file of end-item verifiers at each invocation.	REWORDED.
GEN-18	1	The MPS/Aura simulator shall provide a file selection browse capability.	
GEN-19	1	The MPS/Aura simulator shall provide a configuration save and restore capability.	

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GEN-19.01	1	The MPS/Aura simulator shall be capable of saving module configuration information. The information saved shall consist of the modules that constitute a project, and the module links and link source/destination numbers.	
GEN-19.02	1	The MPS/Aura simulator shall be capable of saving configuration information for IP modules, log modules, and Serial modules.	
GEN-19.03	1	The MPS/Aura simulator shall be capable of saving multiple configurations in separate disk files.	REWORDED slightly.
GEN-19.04	1	The MPS/Aura simulator shall permit the operator to name a disk file in which configuration information shall be saved.	
GEN-19.05	1	The MPS/Aura simulator shall permit the operator to restore configuration information upon initialization.	
GEN-19.06	1	The MPS/Aura simulator shall be capable of restoring configuration information from an existing named disk file.	
GEN-19.07	1	The MPS/Aura simulator shall be capable of displaying the names of the disk files containing configuration information when responding to a restore request during initialization.	
GEN-19.08		The MPS/Aura simulator shall be capable of displaying the file creation date when responding to a restore request during initialization.	
GEN-20	1	The MPS/Aura simulator shall be capable of executing multiple scenario script files simultaneously, up to the limit imposed by CPU and memory capacities.	
GEN-20.01	1	The MPS/Aura simulator shall permit the operator full control of scenario script files that the operator has invoked. The control directives available shall consist of START, STOP, PAUSE, and RESUME.	
GEN-20.02	1	The MPS/Aura simulator shall be capable of starting a scenario script in response to a command received. The operator shall not be able to STOP, PAUSE, or RESUME a scenario script started this way.	
GEN-20.03	1	The MPS/Aura simulator shall be capable of invoking a scenario script from within a scenario script. The operator shall not be able to STOP, PAUSE, or RESUME a scenario script started this way.	
GEN-20.04	1	The MPS/Aura simulator shall be capable of displaying the status of all scenario scripts that were started by the operator. This status shall consist of an indication as to whether the scenario script is running, paused, or finished, a display of the current line number, and a display of the directive currently being executed.	
GEN	TBN	Scenario script processing shall be enhanced to include if/then/else or loop execution based on values in container items in the connected module.	NEW.
GEN	TBN	Scenario script processing shall be enhanced to include triggering from command submnemonics.	NEW.
GEN	TBN	The MPS/Aura simulator shall be capable of selecting packets or VCDUs to be logged from a stream of mixed packets or VCDUs based on <TBN> criteria.	NEW.
GEN	TBD	The MPS/Aura simulator shall provide a limited command generation capability, the purpose of which is to facilitate verification of simulator operational readiness.	NEW.
GEN	TBD	The MPS/Aura simulator shall provide a limited telemetry data quality monitoring capability, the purpose of which is to facilitate verification of simulator operational readiness.	NEW.
GUI-01	1	The MPS/Aura simulator shall accept and validate all operator directives.	
GUI-01.01	1	The MPS/Aura simulator GUI shall maintain a history list of directives entered by the operator. This history list shall store a maximum of 10 operator directives.	
GUI-01.02	1	The MPS/Aura simulator GUI shall permit the operator to re-execute directives stored in the history list.	

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GUI-01.03	1	The MPS/Aura simulator GUI shall permit the operator to edit directives stored in the history list.	
GUI-02	1	The MPS/Aura simulator GUI shall provide the capability to display command packets received.	
GUI-03	1	The MPS/Aura simulator GUI shall provide the capability to display telemetry and CLCW packets transmitted.	
GUI-04	1	The MPS-Aura simulator GUI shall provide the capability to display command and telemetry status.	
GUI-05	1	The MPS/Aura simulator GUI shall provide the capability to display the current receive and transmit network configuration to the operator.	
GUI-06	1	The MPS/Aura simulator shall accept and execute operator directives that set spacecraft time and GMT.	TO BE REMOVED – Duplicate of GEN-02.
GUI-07	1	The MPS/Aura simulator shall provide the capability to display the EDOS Service Header appended to transmitted telemetry packets.	
GUI-08	1	The MPS/Aura simulator shall provide the capability to display the Telemetry Packet Header of a selected APID.	
GUI-09	1	The MPS/Aura simulator shall provide the capability to display GMT and Spacecraft times.	
GUI-10	1	The MPS/Aura simulator shall provide the capability to display the current values of the spacecraft and instrument CLCWs.	
GUI-11	1	The MPS/Aura simulator shall provide the capability to display event messages.	
GUI-12	1	The MPS/Aura simulator shall provide the capability to display telemetry and CLCW transmit status.	
GUI-13	1	The MPS/Aura simulator shall provide the capability to display command receipt status.	
GUI-14	1	The MPS/Aura simulator shall be capable of updating all displays periodically.	
GUI-15	1	The MPS/Aura simulator shall provide a generic buffer display.	
GUI	TBD	The MPS/Aura simulator shall provide a single display giving the telemetry packet enable status and transmit interval for all APIDs in the PDB.	NEW.
INIT-01	1	The MPS/Aura simulator shall be capable of selecting a desired version of the PDB at operator request during initialization.	
INIT-01.01	1	During initialization, the MPS/Aura simulator shall provide the operator with the capability to select one version of the Aura PDB from among those available.	RENUMBERED from INIT-01.02. Removed original INIT-01.01
INIT-01.02	1	During initialization, if the operator does not select a version of the Aura PDB, the MPS/Aura simulator will default to the most recent version available.	RENUMBERED from INIT-01.03
INIT	TBD	Dependence upon Oracle as a database repository shall be removed.	NEW. The SIMSS baseline software is being modified to ingest PDB flat files directly during initialization. The completion date of this activity is TBD.

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MDL-01		The MPS/Aura simulator shall provide a telemetry parameter modeling capability. The purpose of this capability is to simulate the behavior of a limited set of telemetry parameters.	The modeling requirements (MDL-n) are Placeholders. The MPS/Aura simulator shall inherit the SIMSS Modeling capability when it achieves sufficient maturity. The completion date of that activity is TBD. The exact modeling requirements are TBD.
MDL-02		The MPS/Aura simulator shall turn on and off selected modeling under operator control.	
MDL-03		The MPS/Aura simulator shall be capable of changing between static, table, or algorithm models under operator control	
MDL-04		The MPS/Aura simulator shall accept and execute modeling directives that enable or disable selected modeling.	
MDL-05		The MPS/Aura simulator shall accept and execute modeling directives that associate any telemetry parameter with any predefined model.	
MDL-06		The MPS/Aura simulator shall accept and execute modeling directives that change between static, table, or algorithm models.	
MDL-07		The MPS/Aura simulator shall provide the operator with an offline capability to access model functions and coefficients.	
MDL-08		The MPS/Aura simulator shall provide the operator with an offline capability to translate ASCII-formatted files containing static, table, and algorithm modeling information into a binary form readable by The MPS/Aura simulator.	
TLM-01	1	The MPS/Aura simulator shall be capable of switching between IP and serial modes of operation for command receipt and telemetry transmission.	
TLM-02	1	The MPS/Aura simulator shall provide the capability to transmit one stream of telemetry when in IP mode.	
TLM-03	1	The MPS/Aura simulator shall be capable of independently configuring telemetry and CLCW transmit when in IP mode.	
TLM-03.01	1	The MPS/Aura simulator shall be capable of transmitting packets containing CLCWs independently of telemetry transmission when in IP mode	
TLM-03.02		The MPS/Aura simulator shall default the CLCW packet transmission rate to 8 packets per second.	NEW.
TLM-03.03		The MPS/Aura simulator shall be capable of adjusting the frequency of CLCW packet transmission under operator control. The purpose of this requirement is to permit the CLCW transmission rate to match that of the telemetry transmission.	NEW.
TLM-03.04	1	The MPS/Aura simulator shall be capable of independently configuring IP mode telemetry and CLCW transmission to UDP MULTICAST mode when in IP mode.	RENUMBERED.
TLM-03.05	1	The MPS/Aura simulator shall be capable of independently configuring IP mode telemetry and CLCW transmission to any valid UDP MULTICAST IP address when in IP mode.	RENUMBERED.
TLM-03.06	1	The MPS/Aura simulator shall be capable of independently configuring IP mode telemetry and CLCW transmission to any valid UDP MULTICAST Port number when in IP mode.	RENUMBERED.

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TLM-03.07	1	The MPS/Aura simulator shall be capable of independently configuring IP mode telemetry and CLCW transmission to any block length between one and 6000 bytes when in IP mode.	RENUMBERED.
TLM-03.08	1	The MPS/Aura simulator shall be capable of independently configuring IP mode telemetry transmission to variable block length when in IP mode.	RENUMBERED.
TLM-04	1	The MPS/Aura simulator shall be capable of transmitting one stream of CADUs when in serial mode.	REWORDED.
TLM-04.01	1	When in serial mode, the MPS/Aura simulator shall build S-band I-Channel CADUs as described in the Aura Spacecraft to Ground ICD.	REWORDED.
TLM-04.02	1	When in serial mode, the MPS/Aura simulator shall build and transmit I-Channel Fill CADUs as described in the Aura Spacecraft to Ground ICD when there is not enough telemetry data available to fill a CADU.	REWORDED.
TLM-05	1	The MPS/Aura simulator shall accept and execute operator directives that set the value of any telemetry parameter by mnemonic.	
TLM-06	1	The MPS/Aura simulator shall accept and execute operator directives that set the value of any location in the Aura-simulated spacecraft memory.	
TLM-07	1	The MPS/Aura simulator shall accept and execute operator directives that request the value of any telemetry parameter for display.	
TLM-07.01	1	The MPS/Aura simulator shall be capable of displaying telemetry parameter values in decimal raw counts and in Engineering Units	
TLM-07.02	1	The MPS/Aura simulator shall use the PDB to define raw-data-to-EU and EU-to-raw-data conversions for telemetry parameters.	
TLM-07.03	1	The MPS/Aura simulator shall permit the operator to update telemetry parameter values in decimal, hex, and octal raw data numbers, and in Engineering Units.	
TLM-07.04	1	The MPS/Aura simulator shall be capable of displaying multiple telemetry parameter values in a GUI window.	
TLM-07.05	1	The MPS/Aura simulator shall be capable of displaying multiple iterations of a GUI window for display and update of telemetry parameters.	
TLM-08	1	The MPS/Aura simulator shall accept and execute operator directives that request the contents of any telemetry packet.	
TLM-09	1	The MPS/Aura simulator shall accept and execute operator directives that request the value of any location or block of locations in simulated spacecraft memory.	
TLM-10	1	The MPS/Aura simulator shall set initial telemetry parameter values from information extracted from the Aura PDB.	REWORDED.
TLM-11	1	The MPS/Aura simulator shall accept and execute operator directives that result in changes to telemetry packet header values.	
TLM-12	1	The MPS/Aura simulator shall accept and execute telemetry directives that control the Aura Solid State Recorder.	PLACEHOLDER. Exact requirement is TBN. A low fidelity emulation may be achieved through the use of scenario scripts.
TLM-13	1	The MPS/Aura simulator shall provide for the storage of housekeeping telemetry to be used as playback data.	

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TLM-14	1	The MPS/Aura simulator shall use the information from the Aura PDB to generate and transmit telemetry packets.	
TLM-14.01	1	The MPS/Aura simulator shall be capable of creating CCSDS-format telemetry packets from information contained in the Aura PDB telemetry packet specification file.	
TLM-14.02	1	The MPS/Aura simulator shall provide the capability to generate and transmit telemetry packets with APIDs identical to the Aura spacecraft.	
TLM-14.03	1	The MPS/Aura simulator shall use the APID and secondary key fields of the Aura PDB packet definition file to identify unique packets.	
TLM-14.04	1	The MPS/Aura simulator shall generate a telemetry packet for each unique combination of APID and secondary key.	
TLM-14.05	1	The MPS/Aura simulator shall accept and execute operator directives to set the packet generation rate for any APID defined in the Aura PDB.	REWORDED.
TLM-14.06	1	The MPS/Aura simulator shall populate the telemetry packet primary header fields in the following list in accordance with information obtained from the Aura Spacecraft to Ground ICD and applicable CCSDS documents: Version Number, Type, Secondary Header Flag, APID, Sequence Flag, Sequence Count, and Packet Length.	
TLM-14.07	1	The MPS/Aura simulator shall place the secondary key into the telemetry packet at the offset specified by the Aura PDB telemetry packet specification file and shall use the number of bits specified by that file.	
TLM-14.08	1	The MPS/Aura simulator shall generate a telemetry packet secondary header in accordance with the secondary header type (SC, GIRD, or None for SUROM-TIE packets) implied by the contents of the packet type field of the Aura PDB telemetry packet specification file. For each secondary header type, the contents shall be as described in applicable sections of the Aura Spacecraft to Ground ICD.	
TLM-15	1	The MPS/Aura simulator shall insert simulated spacecraft time in the telemetry packet headers	
TLM-16	1	The MPS/Aura simulator shall maintain data values for all telemetry parameters defined in the PDB telemetry parameter specification file. These data values shall be available for display to the operator and for inclusion into telemetry packets.	
TLM-16.01	1	The MPS/Aura simulator shall be capable of inserting telemetry point values into packets using information from the Aura PDB telemetry description and telemetry parameter specification files.	
TLM-16.02	1	The MPS/Aura simulator shall use the APID and secondary key fields of the PDB telemetry parameter specification file to determine the correct packet for each telemetry parameter.	
TLM-17	1	The MPS/Aura simulator shall send out telemetry packets at specified intervals of spacecraft time. These specific intervals shall be as defined by the PDB for each APID and secondary key combination and shall be modifiable by the operator.	
TLM-18	1	The MPS/Aura simulator shall be capable of simulating spacecraft memory dumps. The MPS/Aura simulator shall build packets based on the contents of the simulated spacecraft memory.	REWORDED.
TLM-19	1	The MPS/Aura simulator shall accept and execute directives that start and stop transmission of telemetry data.	REWORDED.

Proposed MPS/Aura Level 4 Requirements

MPS/Aura Requirement	Release	MPS/Aura Requirement Description	Comments
TLM-19.01	1	The MPS/Aura simulator shall start transmission of telemetry and CLCW packets upon receipt of a start telemetry directive when in IP mode, unless startup of CLCW packet transmission is inhibited. In that case only telemetry packet transmission shall be started.	NEW.
TLM-19.02	1	The MPS/Aura simulator shall stop transmission of telemetry and CLCW packets upon receipt of a stop telemetry directive when in IP mode.	NEW.
TLM-19.03	1	The MPS/Aura simulator shall be capable of starting and stopping the transmission of CLCW packets independently of telemetry transmission when in IP mode.	NEW.
TLM-19.04	1	The MPS/Aura simulator shall be capable of setting a flag, under operator control, which, when set, shall inhibit startup of CLCW packet transmission when telemetry transmission is started in IP mode.	NEW.
TLM-20	1	The MPS/Aura simulator shall accept and execute operator directives that start and stop logging of telemetry and CLCWs independently.	
TLM-21	1	The MPS/Aura simulator shall generate EDUs and EDOS data headers based on the User Datagram Protocol (UDP) format defined in the EDOS External ICD Data Format Control Document.	
TLM-22	1	The MPS/Aura simulator shall allow modification of any field within the EDOS data header.	
TLM-23	1	The MPS/Aura simulator shall provide the capability of transmitting the CLCW in the form of EDUs to EOC through EBnet.	
TLM-24	1	The MPS/Aura simulator shall provide the capability to enable and disable the transmission of CLCW EDUs.	TO BE REMOVED. Duplicate of TLM-19.03.
TLM-25	1	The MPS/Aura simulator shall provide for the storage of EDUs during the testing session for later transmission.	
TLM-26	1	The MPS/Aura simulator shall transmit EDUs on an as built basis.	
TLM-27	1	The MPS/Aura simulator shall provide the capability to transmit EDUs using the UDP protocol.	
TLM-28	1	The MPS/Aura simulator interface with the EOC shall comply with the telemetry interface formats and protocols specified in the EDOS to EGS Elements interface document	
TLM-29	1	The MPS/Aura simulator, when acting as a spacecraft, shall comply with the telemetry data formats and protocols specified in the TGT to EDOS interface document.	RENUMBERED from PMTLM-31.
TLM-30	1	The MPS/Aura simulator, when acting as an EPGS, shall comply with the telemetry data formats and protocols specified in applicable interface documents for the EPGS to EDOS interface.	RENUMBERED from PMTLM-32.
TLM-31	1	The MPS/Aura simulator shall provide the capability to accept Aura telemetry data by electronic transmission and by physical media.	RENUMBERED from PMTLM-33.
TLM-32	1	The MPS/Aura simulator shall be capable of transmitting the contents of a user provided file containing Aura telemetry data.	RENUMBERED from PMTLM-34.
TLM-33	1	The MPS/Aura simulator shall set, adjust, and operate the spacecraft clock as commanded.	TO BE REMOVED. Duplicate of GEN-02.
TLM-34	1	The MPS/Aura simulator shall provide the capability to store up to 8MB of transmitted EDUs.	RENUMBERED from PMTLM-38.
TLM-35	1	The MPS/Aura simulator shall be capable of modifying multiple consecutive buffer locations via a single operator directive.	RENUMBERED from PMTLM-39.
TLM-36	1	The MPS/Aura simulator shall be capable of a limited simulation of clock correlation telemetry. The details of the implementation of this requirement are TBD.	RENUMBERED from PMTLM-40.

Proposed MPS/Aura Level 4 Requirements

MPS/Aura Requirement	Release	MPS/Aura Requirement Description	Comments
TLM	TBD	The MPS/Aura simulator serial output shall be modified to work correctly with the Serial module event-driven handshaking.	NEW. The SIMSS baseline software interface to the Serial Output module is being changed. The completion date of this activity is TBD.
TLM	TBD	The MPS/Aura simulator shall be capable of reading telemetry packets from a disk file and interleaving them into the stream of simulator-generated packets.	NEW.
TLM	TBN	The MPS/Aura simulator shall be capable of simulating an instrument memory dump of loaded data.	NEW. The exact capability is TBN.
TLM	TBD	The MPS/Aura simulator shall be capable of starting and stopping IP-mode telemetry and CLCW transmission via a single operator directive.	NEW.
TLM	TBN	The MPS/Aura simulator shall be capable of a <TBN> simulation of Solid State Recorder operation.	NEW.

The requirements defined as To Be Determined (TBD) and/or To Be Negotiated (TBN) are capabilities that may be added to the MPS/Aura simulator. The exact Level 4 requirements will be defined after negotiation of the desired capability.